CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/KRIDL/W.No.13/BC/Shape.T/2017-18 11.01.2018

TEST REPORT ON FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	:	Improvements to Roads and asphalting at pipeline road to Maheshwaramma temple and other roads in Mallasandra Ward No.13 in Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	BBMP/EE/DD/WO/145/2017-18 Dated: 21.12.2017
* Sample ID	:	Hot Mix Plant, Bangalore
Technical Reference	:	IS : 2386(Part -1)-1963 (RA-2011)
* Type of Mix	:	Bituminous Macadam
Date of Testing	:	11.01.2018

Sl.No.	Description	Result
1	Flakiness Index	11.03%
2	Elongation Index	13.25%
3	Combined Flakiness & Elongation Index	24.28%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Macadam is 30%

Note:

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Job No: CTCE/BBMP/KRIDL/W.No.13/BM/Stripping/2017-18

12.01.2018

TEST REPORT ON STRIPPING VALUE OF ROAD AGGREGATE (STATIC IMMERSION TEST)

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of work	:	Improvements to Roads and asphalting at pipeline road to Maheshwaramma temple and other roads in Mallasandra Ward No.13 in Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	BBMP/EE/DD/WO/145/2017-18 Dated: 21.12.2017
Technical reference	:	IS: 6241
* Type of Mix	:	Bituminous Macadam
Date of Testing	:	12.01.2018

Type of binder : 60/70
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.0 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.5	3.60	96.40
2	3.6		
3	3.7		

*Information is furnished by the Customer/Representative.

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Comments:
→ Minimum allowable Aggregate retained coating for Bituminous Macadam is 95%

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Job No: CTCE/BBMP/KRIDL/W.No.13/BM/Sp_Wa/2017-18 12.01.2018

TEST REEPORT ON SPECIFIC GRAVITY AND WATER ABSORPTION

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	:	Improvements to Roads and asphalting at pipeline road to Maheshwaramma temple and other roads in Mallasandra Ward No.13 in Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	BBMP/EE/DD/WO/145/2017-18 Dated: 21.12.2017
Technical reference	:	IS : 2386(Part -3)-1963 (RA-2011)
* Type of Mix	:	Bituminous Macadam
Date of Testing	:	12.01.2018

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 2	
1	Weight of aggregate suspended in water with the basket	W_1 g	2003	2005	2004	
2	Weight of basket suspended in water	W_2 g	750	750	750	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1253	1255	1254	
4	Weight of saturated surface dry aggregate in air	W_3 g	2009	2008	2007	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	756	753	753	
6	Weight of oven dried aggregate	W_4 g	1997	1996	1998	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.642	2.651	2.653	2.647
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.684	2.694	2.685	2.685
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.60%	0.60%	0.45%	0.53%

*Information is furnished by the Customer/Representative.

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Comments:
→ Maximum allowable Aggregate Water absorption value for Bituminous Macadam is 2.0%

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Job No.: CTCE/BBMP/KRIDL/W.No.13/BM/Bitumen/2017-18 12.01.2018

TEST REPORT ON BITUMEN CONTENT DETERMINATION OF BITUMINOUS MACADAM MIX

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of work	:	Improvements to Roads and asphalting at pipeline road to Maheshwaramma temple and other roads in Mallasandra Ward No.13 in Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	BBMP/EE/DD/WO/145/2017-18 Dated: 21.12.2017
* Sample ID	:	Road from pipeline road to Maheshwaramma temple, Mallasandra Ward No.13.
Technical Reference	:	IRC:SP:11-1984
Date of Testing	:	12.01.2018

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	482.5	482
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	17.5	18.00
7. Bitumen content in %	3.50	3.60
8. Average	3.55	

*Information is furnished by the Customer/Representative.

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Job No.: CTCE/BBMP/KRIDL/W.No.13/BM/Gradation/2017-18 12.01.2018

TEST REPORT ON GRADATION OF BITUMINOUS MACADAM MIX

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of work	:	Improvements to Roads and asphalting at pipeline road to Maheshwaramma temple and other roads in Mallasandra Ward No.13 in Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	BBMP/EE/DD/WO/145/2017-18 Dated: 21.12.2017
* Sample ID	:	Road from pipeline road to Maheshwaramma temple, Mallasandra Ward No.13.
Technical Reference	:	IS:2386 and IRC:SP:11-1984
Date of Testing	:	12.01.2018

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-04 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
26.5	0	0	0	100	100
19	36.69	7.60	7.60	92.40	90-100
13.2	80.21	16.62	24.23	75.77	56-88
4.75	252.6	52.35	76.58	23.42	16-36
2.36	48.56	10.06	86.64	13.36	4-19
0.3	23.26	4.82	91.47	8.53	2-10
0.075	12.32	2.55	94.02	5.98	0-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-04 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
26.5	0	0	0.00	100	100
19	28.59	5.93	5.93	94.07	90-100
13.2	82.26	17.07	23.00	77.00	56-88
4.75	259.6	53.86	76.86	23.14	16-36
2.36	45.65	9.47	86.33	13.67	4-19
0.3	26.65	5.53	91.86	8.14	2-10
0.075	6.35	1.32	93.17	6.83	0-8

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